ORDER NO. HAD85022425C2

Service Manual

Tuner

QUARTZ Synthesizer
FM/MW/LW Stereo Tuner

ST-X70L

Color

(K)...Black Type

Color	Areas
(K)	[EW]...Switzerland.
(K)	[EK] ...United Kingdom.
(K)	[EF] ...France.
(K)	[EB] ...Belgium.

SPECIFICATIONS
(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz
	87.525~108.00 MHz (+25 kHz shift)
Sensitivity	
S/N 30 dB	1.0 μV (75Ω)
S/N 26 dB	0.9 μV (75Ω)
S/N 20 dB	0.8 μV (75Ω)
IHF usable sensitivity	1.0 μV (IHF '58)
IHF 46 dB stereo quieting sensitivity	22 μV(75Ω)
Total harmonic distortion	
MONO	0.15%
STEREO	0.3%
S/N	
MONO	70 dB (77 dB, IHF)
STEREO	64 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~ −1.5 dB
Alternate channel selectivity	65 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	80 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	55 dB
Stereo separation	
1 kHz	40 dB
10 kHz	30 dB
Carrier leak	
19 kHz	−60 dB (−60 dB, IHF)
38 kHz	−60 dB (−60 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.0 dB
Limiting point	1.0 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	
MW	522~1629 kHz (9 kHz-steps)
LW	155~353 kHz (9 kHz-steps)
	153~351 kHz (−2 kHz shift)
Sensitivity (S/N 20 dB)	
MW	20 μV, 300 μV/m
LW	100 μV
Selectivity (±9 kHz)	
MW (at 999 kHz)	55 dB
LW (at 254 kHz)	55 dB
Image rejection	
MW (at 999 kHz)	40 dB
LW (at 254 kHz)	40 dB
IF rejection	
MW (at 999 kHz)	60 dB
LW (at 254 kHz)	35 dB

■ GENERAL

Output voltage	0.3V (0.6V, IHF)
Power consumption	8W
Power supply	
For United Kingdom	AC 50 Hz/60 Hz, 240V
For continental Europe	AC 50 Hz/60 Hz, 220V
Dimensions (W×H×D)	315 × 60.5 × 250 mm
	(12-13/32"×2-13/32"×9-27/32")
Weight	1.7 kg (3.8 lb.)

Note:
Specifications are subject to change without notice. Weight and dimensions shown are approximate.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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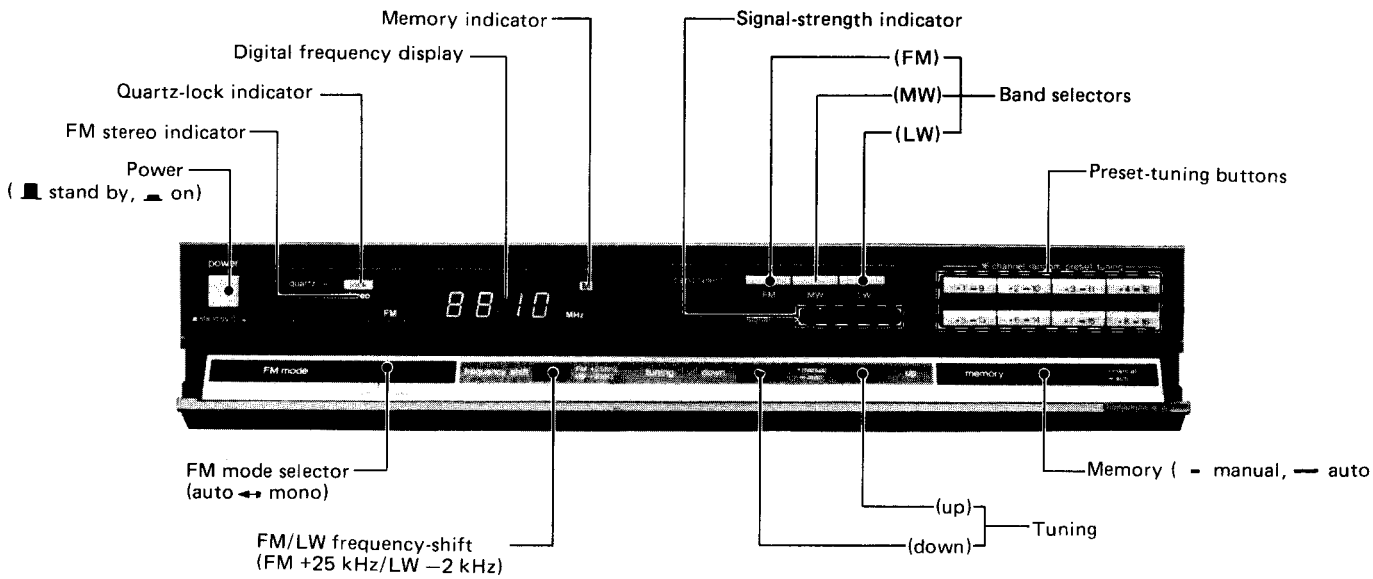
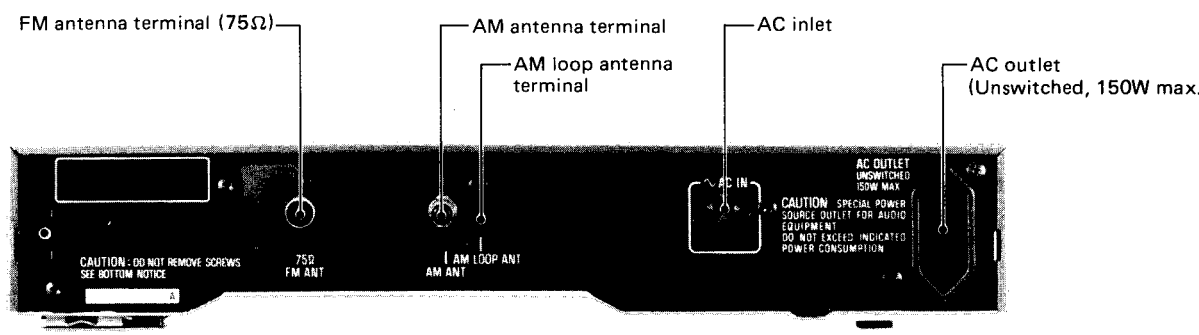
■ LOCATION OF CONTROLS





- The power supply for this unit varied depending upon the areas. Also, the parts used for power supply are different. So, refer to the replacement parts list.

★ 220V (50/60 Hz) for Continental Europe.

★ 240V (50/60 Hz) for United Kingdom.

ORDER NO. HAD85022425C2-A

QUARTZ Synthesizer FM/MW/LW Stereo Tuner

ST-X70L

- This booklet contains the specifications and adjusting procedures for ST-X70L, written in German and French.
- File this manual together with the ST-X70L service manual (Order No. HAD85022425C2).

- Das vorliegende Büchlein enthält die technische Daten und Justierverfahren für den ST-X70L in deutscher, und französischer spanischer Sprache.
- Bewahren Sie das Büchlein zusammen mit der Bedienungsanleitung für des ST-X70L auf (Bestell-Nr. HAD85022425C2).

- Cette brochure contient les spécifications et les procédures de mises au point pour le ST-X70L, écrites en allemand, et en français.
- Classer ce manuel en même temps qu'avec le manuel de service du ST-X70L (N° d'order: HAD85022425C2).

DEUTSCH

■ TECHNISCHE DATEN

(Die technischen Daten können infolge von Verbesserungen ohne Ankündigung geändert werden.)

(DIN 45 500)

■ UKW-TUNERTEIL

Wellenbereich	87,50 ~ 108,00 MHz
	87,525 ~ 108,00 MHz (+25 kHz shift)
Eingangsempfindlichkeit	
S/R 30 dB	1,0 μV (75 Ω)
S/R 26 dB	0,9 μV (75 Ω)
S/R 20 dB	0,8 μV (75 Ω)
Nutzempfindlichkeit nach IHF	1,0 μV (nach IHF '58)
Stereoumschaltschwelle bei 46 dB nach IHF	22 μV(75 Ω)
Gesamtklirrfaktor	
Mono	0,15%
Stereo	0,3%
Geräuschabstand	
Mono	70 dB (77 dB nach IHF)
Stereo	64 dB (70 dB nach IHF)
Frequenzgang	20 Hz ~ 15 kHz (+0,5 dB ~ −1,5 dB)
Trennschärfe bei Störsender	65 dB
Einfangverhältnis	1,0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	55 dB
ZF-Dämpfung bei 98 MHz	80 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	80 dB
MW-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	40 dB
10 kHz	30 dB
Trägerrest	
19 kHz	−60 dB (−60 dB nach IHF)
38 kHz	−60 dB (−60 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,0 dB
Begrenzereinsatz	1,0 μV
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschluß	75 Ω (unsymmetrisch)

■ MW-TUNERTEIL

Wellenbereiche	
MW	522 ~ 1629 kHz (9-kHz-schritte)
LW	155 ~ 353 kHz (9-kHz-schritte)
	153~351 kHz (−2 kHz shift)
Eingangsempfindlichkeit (S/R 20 dB)	
MW	20 μV, 300 μV/m
LW	100 μV
Trennschärfe (±9 kHz)	
MW (bei 999 kHz)	55 dB
LW (bei 254 kHz)	55 dB
Spiegelfrequenz-Dämpfung	
MW (bei 999 kHz)	40 dB
LW (bei 254 kHz)	40 dB
ZF-Dämpfung	
MW (bei 999 kHz)	60 dB
LW (bei 254 kHz)	35 dB

■ ALLGEMEINE DATEN

Ausgangsspannung	0,3 V (0,6 V, IHF)
Leistungsaufnahme	8W
Netzspannung	
Für Kontinentaleuropa	Wechselstrom 50 Hz/60 Hz, 220V
Abmessungen (B×H×T)	315 × 60,5 × 250 mm
Gewicht	1,7 kg

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage H.P. 3045) gemessen.

DEUTSCH

■ MESSUNGEN UND JUSTIERUNGEN

MW/LW/UKW

Einstellungen der Bedienelemente und zu verwendende Geräte.

- MW/UKW-Meßsender (MW/UKW-MS)
- Stereo-Modulator
- Verzerrungs-Analysator
- Oszilloskop
- Elektronische Wechselstrom- und Gleichstrom-Voltmeter (EVM).
- Frequenzzähler
- Drosselspule (100μH)
- Widerstand (100kΩ)
- Keramischer Kondensator (200pF)

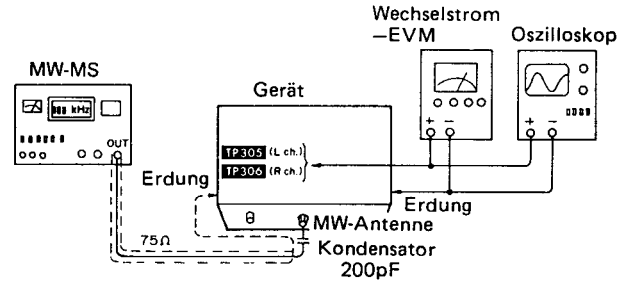
Anmerkung: Für **T201** (MW-ZFT), **L203** (MW-OSZ.-Spule) **L251** (LW-Antennenspule) und **L301**, **L302** (19 kHz, 38 kHz Tiefpaßfilter) werden justierte Ersatzteile geliefert. Die Kerne dieser Teile daher nicht drehen.

MW-HF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Das Gerät auf "**MW**" einstellen.
3. Die Radiofrequenzanzeige und den Meßsender auf **612 kHz** einstellen.
4. **L202** auf maximale Ausgangsleistung abgleichen.
5. Die Radiofrequenzanzeige und den Meßsender auf **1503 kHz** einstellen.
6. **CT201** auf maximale Ausgangsleistung abgleichen.
7. Die Schritte 3 — 6. wiederholen.

Anmerkung: Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer Verstärkungsregelung (AGC) sein.

ZUSTAND DES MW-MESSENDERS
Modulation. 30%
Modulationsfrequenz. . . 400 Hz

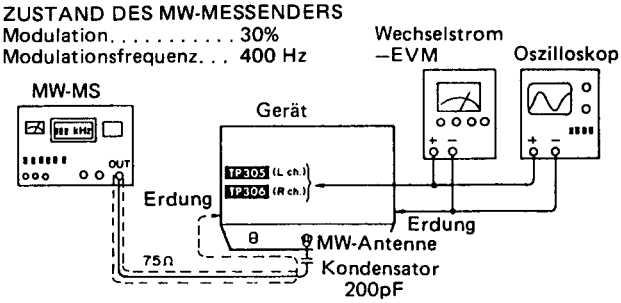


LW-HF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Das Gerät auf "**LW**" einstellen.
3. Die Radiofrequenzanzeige und den Meßsender auf **155 kHz** einstellen.
4. **L252** auf maximale Ausgangsleistung abgleichen.
5. Die Raidofrequenzanzeige und den Meßsender auf **353 kHz** einstellen.
6. **CT251** auf maximale Ausgangsleistung abgleichen.
7. Die Schritte 3 — 6 wiederholen.

Anmerkung: Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer Verstärkungsregelung (AGC) sein.

ZUSTAND DES MW-MESSENDERS
Modulation. 30%
Modulationsfrequenz. . . 400 Hz

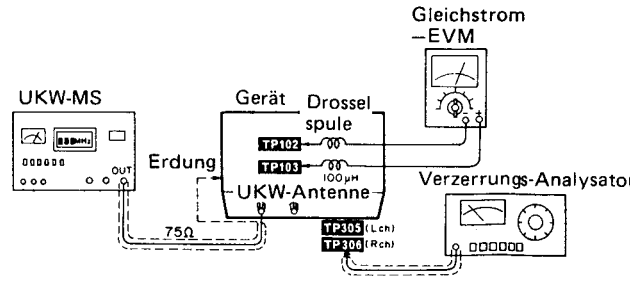


UKW-MONO-VERZERRUNGS-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Das Gerät auf "FM" einstellen.
3. Die Radiofrequenzanzeige und den Meßsender auf 100,10 MHz einstellen.
4. Den Kern von **T101** so justieren, daß die im Signalzustand gemessene Spannung **0 mV** (0 ± 50 mV) im 300 mV-Bereich beträgt.
5. **T102** so justieren, daß der Verzerrungsfaktor des linken Kanals minimal wird.
6. Schritte 4 und 5 einige Male wiederholen.
7. Überprüfen, daß die Verzerrungsfaktoren des linken und rechten Kanals fast gleich sind und weniger als 0,5% betragen.

Anmerkung: Für die Justierung ist ein Schraubendreher aus Kunststoff zu verwenden.

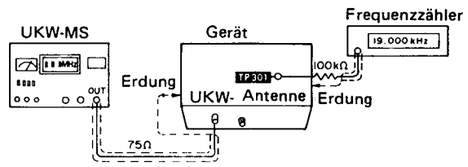
ZUSTAND DES UKW-MESSENDERS Verzerrungs-Analysator
Modulation 100%
Modulationsfrequenz. . . 400 Hz
Ausgangspegel. . . . . 66 dB



UKW-STEREO-JUSTIERUNG (FREIER LAUF)

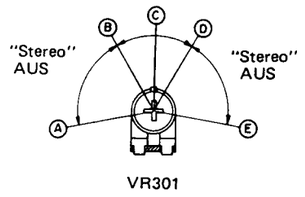
1. Der Testaufbau ist in der Abbildung gezeigt.
2. Den UKW-Betriebsart-Wahlschalter in die "FM auto"-Position stellen.
3. Die Radiofrequenz-Anzeige und den Meßsender auf 100,10 MHz einstellen.
4. **VR301** auf 19 kHz ± 50 Hz auf der Frequenzzähleranzeige justieren.

ZUSTAND DES UKW-MESSENDERS
Modulation. 0
Modulationsfrequenz. . . 0
Ausgangspegel. . . . . 66 dB



* VERWENDUNG EINES ALTERNATIVSYSTEMS

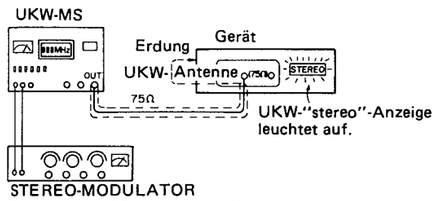
1. Stereosignal vom Meßsender eingeben oder eine Stereo-Sendung empfangen.
2. **VR301** justieren, bis die Stereo-Anzeige aufleuchtet. Den Arm von **VR301** mit Lack sichern, wie in der Abbildung gezeigt.



VR301

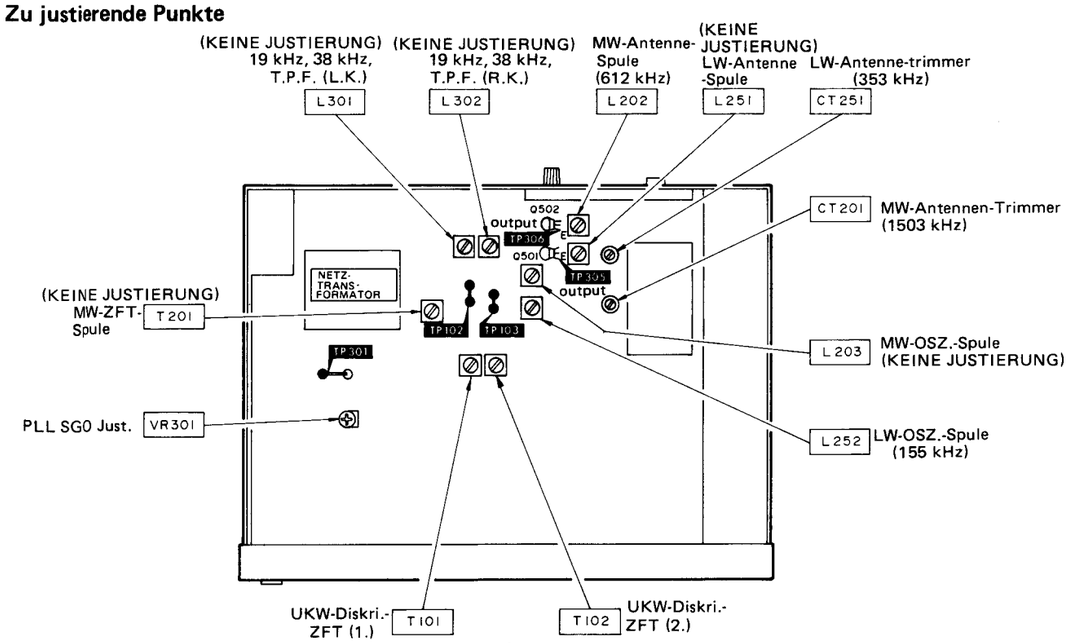
Ⓑ – Ⓓ . . . . . "Stereo"-EIN-Position (Anzeige leuchtet)
Ⓒ . . . . . Punkt der Pilotschaltung justieren.

ZUSTAND DES UKW-MESSENDERS
Modulation. 10%
Modulationsfrequenz. . . Pilot (19 kHz)
Ausgangspegel. . . . . 66 dB



STEREO-MODULATOR
Pilotsignal auf ON. . . . . 19 kHz
Ausgangs-Betriebsart. . . . . L + R

- **Zu justierende Punkte**



FRANÇAIS

■ CARACTERISTIQUES

(Sujet à changement sans préavis)

(DIN 45 500)

■ FM TUNERDELEN

Frekvensomfång	87,50~108,00 MHz 87,525~108,00 MHz (+25 kHz shift)
Känslighet	
S/N (signalbrusförhållande) 30 dB	1,0 μV (75Ω)
S/N (signalbrusförhållande) 26 dB	0,9 μV (75Ω)
S/N (signalbrusförhållande) 20 dB	0,8 μV (75Ω)
Användbar IHF-känslighet	1,0 μV (IHF '58)
IHF 46 dB stereo-dämpningskänslighet	22 μV(75Ω)
Total harmonisk distorsion	
MONO	0,15%
STEREO	0,3%
S/N (signalbrusförhållande)	
MONO	70 dB (77 dB, IHF)
STEREO	64 dB (70 dB, IHF)
Frekvensrespons	20 Hz~,5 kHz, +0,5 dB~−1,5 dB
Alternerande kanalselektivitet	65 dB
Infångningsförhållande	1,0 dB
Spegelåtergång vid 98 MHz	55 dB
IF-återgång vid 98 MHz	80 dB
Falsk responsåtergång vid 98 MHz	80 dB
AM undertryckning	55 dB
Stereoseparation	
1 kHz	40 dB
10 kHz	30 dB
Bärvågsläckage	
19 kHz	−60 dB (−60 dB, IHF)
38 kHz	−60 dB (−60 dB, IHF)
Kanalbalans (250 Hz~6 300 Hz)	±1,0 dB
Gränspunkt	1,0 μV
Bandbredd	
IF-förstärkare	180 kHz
FM-demodulator	1000 kHz
Antennuttag	75Ω (icke balanserad)

■ AM TUNERDELEN

Frekvensomfång	
MV (MW)	522~1629 kHz (9 kHz steg)
LV (LW)	155~353 kHz (9 kHz steg) 153~351 kHz (−2 kHz shift)
Känslighet (signalbrusförhållande) (S/N 20 dB)	
MV (MW)	20 μV, 300 μV/m
LV (LW)	100 μV
Selektivitet (±9 kHz)	
MV (MW) (vid 999 kHz)	55 dB
LV (LW) (vid 254 kHz)	55 dB
Spegelåtergång	
MV (MW) (vid 999 kHz)	40 dB
LV (LW) (vid 254 kHz)	40 dB
IF-återgång	
MV (MW) (vid 999 kHz)	60 dB
LV (LW) (vid 254 kHz)	35 dB

■ ALLMÄNT

Uteffekt	0,3 V (0,6 V, IHF)
Effektförbrukning	8W
Nätanslutning	
Europeiska Kontinenten	Växelström AC 50 Hz/60 Hz, 220V
Storlek (B×H×D)	315 × 60,5 × 250 mm
Vikt	1,7 kg

■ MESURAGES ET REGLAGES

MW/LW/FM

Positionnements des commandes et équipement utilisé

- Générateur de signaux M.F. et A.M. (AM et FM-SG).
- Modulateur stéréophonique
- Analyseur de distorsion
- Oscilloscope
- Voltmètre électronique à C.A. et C.C. (EVM).
- Compteur de fréquence
- Bobine d'amortissement d'arrêt (100μH)
- Résistance (100kΩ)
- Condensateur céramique (200pF)

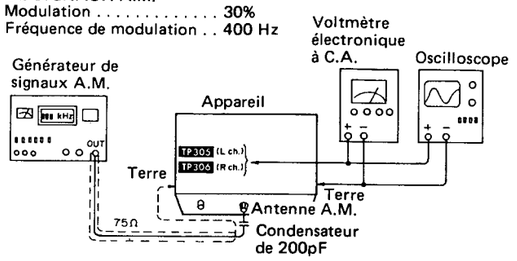
Nota: Pour **T201** (Mod. d'ampl.-Transf. de fréq. inter.), **L203** (Bobine oscillatrice de mod. d'ampli.) **L251** (Bobine ANT LW) et **L301**, **L302** (Filtre passe-bas, 19 kHz, 38 kHz), des pièces réglées sont fournies. Aussi, ne pas tourner les noyaux de ces éléments.

REGLAGE DE A.M.-H.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur la position "AM".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 612 kHz.
4. Régler **L202** pour une sortie maximale.
5. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 1503 kHz.
6. Régler **CT201** pour une sortie maximale.
7. Répéter les étapes 3 ~ 6.

Nota: Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de gain.

CONDITION DU GENERATEUR DE SIGNAUX A.M.
Modulation 30%
Fréquence de modulation . . 400 Hz

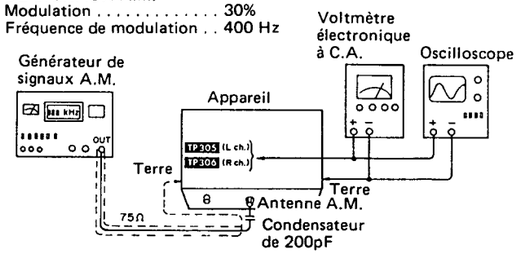


REGLAGE DE RE-LW

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur la position "LW".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 155 kHz.
4. Régler **L252** pour une sortie maximale.
5. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 353 kHz.
6. Régler **CT251** pour une sortie maximale.
7. Répéter les étapes 3 ~ 6.

Nota: Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de gain.

CONDITION DU GENERATEUR DE SIGNAUX A.M.
Modulation 30%
Fréquence de modulation . . 400 Hz

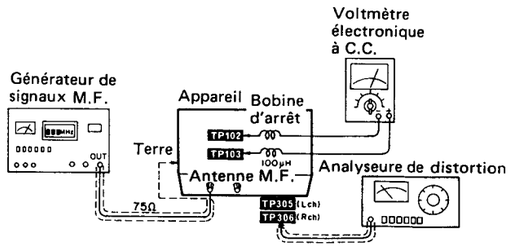


REGLAGE DE DISTORSION MONOPHONIQUE M.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur la position "FM" (M.F.).
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 100,10 MHz.
4. Régler le noyau de **T101** de telle sorte que la tension mesurée sur le mode de signaux soit de **0 mV** (0 ± 50mV) dans une plage de 300 mV.
5. Ajuster **T102** de telle que le facteur de distorsion du nal de gauche soit minimisé.
6. Répéter les étapes 4 et 5 quelques fois.
7. S'assurer que les facteurs de distorsion du canal de gauche et du canal de droite soient sensiblement les mêmes l'un par rapport à l'autre et soient inférieurs à 0,5%.

Nota: Le tournevis de réglage utilisé devra être fait en résines.

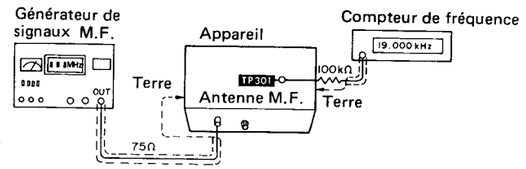
CONDITION DU GENERATEUR DE SIGNAUX M.F.
Modulation 100%
Fréquence de modulation. . .400 Hz
Niveau de sortie. . . . . 66 dB



REGLAGE STEREO M.F. (NON-ASSERVIE)

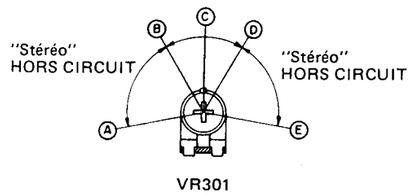
1. Le raccordement de l'équipement d'essai est montré sur la figure.
2. Régler l'appareil sur la position "FM auto". (Avec le bouton-sélecteur de mode FM.)
3. Disposer le réglage du générateur de signaux et l'affichage de radiofréquence sur 100,10 MHz.
4. Ajuster **VR301** pour 19 kHz ± 50 Hz sur le compteur de lecture de fréquences.

CONDITION DU GENERATEUR DE SIGNAUX M.F.
Modulation. 0
Fréquence de modulation. . .0
Niveau de sortie. . . . . 66 dB



* EN UTILISANT UN SYSTÈME ALTERNATIF

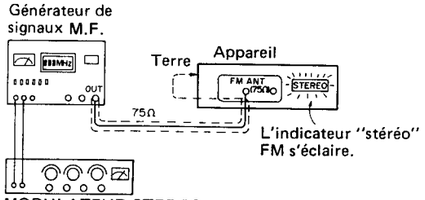
1. Appliquer un signal stéréo à partir du génerateur ou recevoir une émission stéréo.
2. Ajuster **VR301** jusqu'à ce que l'indicateur stéréo s'éclaire. Coller le bras de **VR301** comme il est montré sur la figure.



VR301

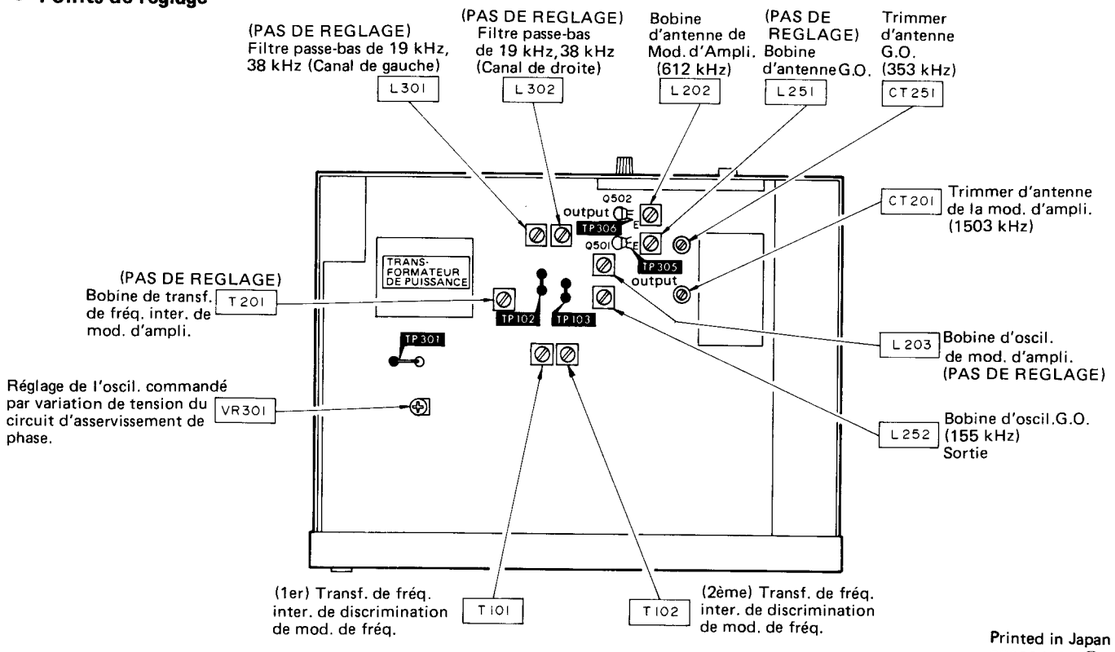
Ⓑ – Ⓓ . . . . . Position de MISE EN CIRCUIT "Stéréo". (Eclairage de l'indicateur)
Ⓒ . . . . . Point de réglage du circuit pilote.

CONDITION DU GENERATEUR DE SIGNAUX M.F.
Modulation 10%
Fréquence de modulation. . . Pilote (19 kHz)
Niveau de sortie. . . . . 66 dB



MODULATEUR STEREO
Signal pilote sur "ON" (mise en circuit). . .19 kHz
Mode de sortie. . . . . Gauche + Droite

- **Points de réglage**


(PAS DE REGLAGE) Filtre passe-bas de 19 kHz, 38 kHz (Canal de gauche)
L301
(PAS DE REGLAGE) Filtre passe-bas de 19 kHz, 38 kHz (Canal de droite)
L302
Bobine d'antenne de Mod. d'Ampli. (612 kHz)
L202
(PAS DE REGLAGE) Bobine d'antenne G.O.
L251
Trimmer d'antenne G.O. (353 kHz)
CT251
Q502
output
TP306
Q501
TP305
output
TRANS-FORMATEUR DE PUISSANCE
CT201
Trimmer d'antenne de la mod. d'ampli. (1503 kHz)
(PAS DE REGLAGE) Bobine de transf. de fréq. inter. de mod. d'ampli.
T201
TP102
TP103
TP301
L203
Bobine d'oscil. de mod. d'ampli. (PAS DE REGLAGE)
Réglage de l'oscil. commandé par variation de tension du circuit d'asservissement de phase.
VR301
L252
Bobine d'oscil.G.O. (155 kHz) Sortie
(1er) Transf. de fréq. inter. de discrimination de mod. de fréq.
T101
T102
(2ème) Transf. de fréq. inter. de discrimination de mod. de fréq.

Printed in Japan
850304000 Ⓗ YK

■ HOW TO PRESET RADIO BROADCAST FREQUENCIES

This unit can be used to preset as many as 16 radio broadcast frequencies: FM/MW/LW random presetting. After broadcast frequencies have been preset as described below, any desired station can be quickly and easily selected by simply touching one button.

■ Memory presetting

There are two types of memory presetting: automatic and manual. Select whichever is preferred.

■ Before memory presetting

Each button is used to preset two stations.

Presetting front channels (CH 1~8)

Press momentarily.

Presetting back channels (CH 9~16)

Press slightly longer.

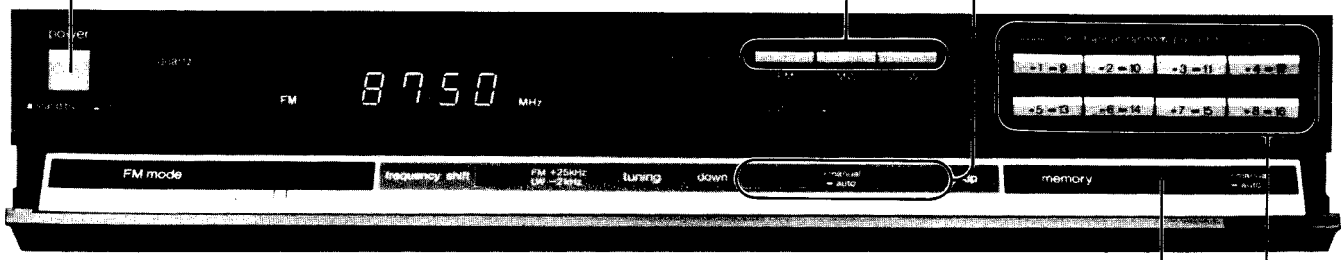
Automatic memory presetting

Beginning at the frequency indicated by the digital display, the FM broadcasting stations, MW broadcasting stations, and LW broadcasting stations will be automatically preset in "channels" 1 through 8 for FM, 9 through 16 for MW, and 13 through 16 for LW, respectively, in order upward from the broadcasting station of the lowest frequency.
Note that in mountainous or remote areas, broadcasting stations which have weak broadcasting signals cannot be automatically preset into the memory.

❸ Set to the minimum frequency.
- **FM: 87.50 MHz**
- **MW: 522 kHz**
- **LW: 155 kHz or 153 kHz**

❷ Press the "FM", "MW" or "LW" button.

❶ Power: "on" (■→▬)



❹ Press. When the frequency indication begins to change, release.

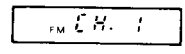
(The frequency will change upward, and the automatic presetting will begin with the broadcasting station of the lowest frequency and will continue in order.)

❺ Confirm the names (call signs, etc.) of the broadcasting stations which are preset to each channel, and enter them on the file sheet.

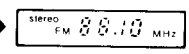
To check the front channels (CH1~8):

Press momentarily.

Channel number is displayed.



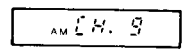
Frequency stored in the memory is displayed.



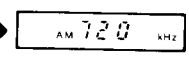
To check the back channels (CH 9~16):

Press slightly longer.

Release the button when the channel number is displayed.

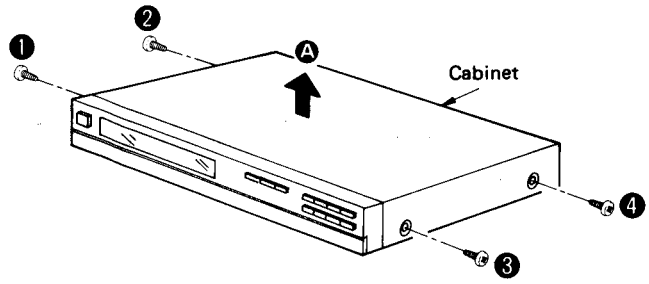


Frequency stored in the memory is displayed.

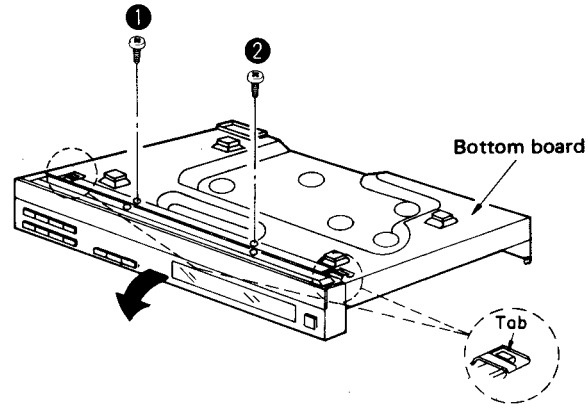


■ DISASSEMBLY INSTRUCTIONS

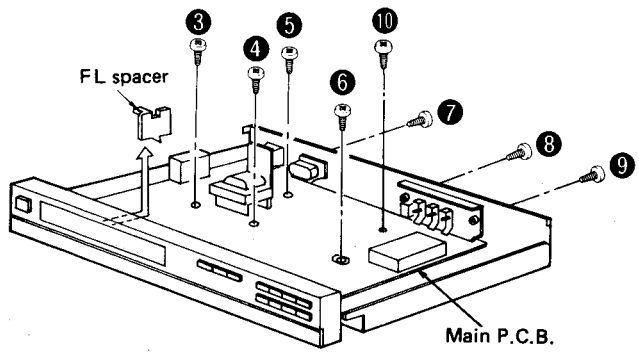
Ref. No. 1	How to remove the cabinet
Procedure 1	• Remove the 4 screws(❶ ~ ❹). • Move the cabinet in the direction of the arrow Ⓐ

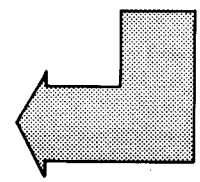


Ref. No. 2	How to remove the main P.C.B.
Procedure 1 → 2	• Remove the 2 screws (❶, ❷). • Push the 2 tabs. • Remove the front panel.

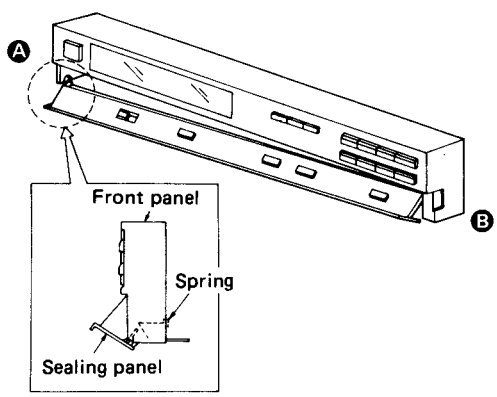


- Remove the FL spacer.
- Remove 8 screws (❸ ~ ❿).

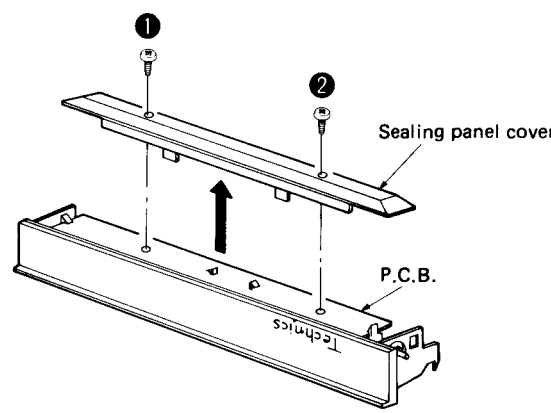




Ref. No. 3	How to remove the sealing panel
Procedure 3	• Open the sealing panel and press it down at side Ⓐ.



- Remove the 2 screws (❶,❷) to remove the P.C.B.



Note: When fitting the sealing panel, remove the sealing panel cover, and first set the Ⓑ side and make sure the spring is in contact with the sealing panel, then set the Ⓐ side.

■ MEASUREMENTS AND ADJUSTMENTS

■ MW/LW/FM

Control positions and equipment used

- AM and FM signal generator (AM and FM-SG).
- Stereo modulator
- Distortion analyser
- Oscilloscope
- AC and DC electronic voltmeter (EVM)
- Frequency counter
- Choke coil (100μH)
- Resistor (100kΩ)
- Ceramic capacitor (200pF)

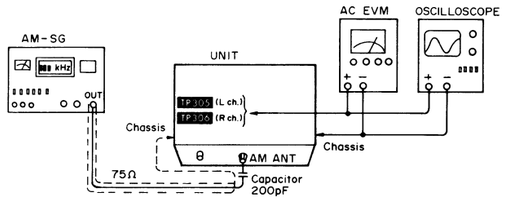
Note: For **T201** (AM-IFT), **L203** (MW OSC coil) **L251** (LW antenna coil) and **L301, L302** (19 kHz, 38 kHz L.P.F.), adjusted parts are supplied. So, do not turn the cores of these parts.

MW-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "**MW**" position.
3. Place the radio frequency display and signal generator setting to **612 kHz**.
4. Adjust **L202** for maximum output.
5. Place the radio frequency display and signal generator setting to **1503 kHz**.
6. Adjust **CT201** for maximum output.
7. Repeat steps 3 ~ 6.

Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency..... 400 Hz

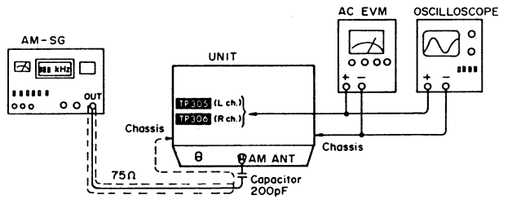


LW-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "**LW**" position.
3. Place the radio frequency display and signal generator setting to **155 kHz**.
4. Adjust **L252** for maximum output.
5. Place the radio frequency display and signal generator setting to **353 kHz**.
6. Adjust **CT251** for maximum output.
7. Repeat steps 3 ~ 6.

Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency..... 400 Hz

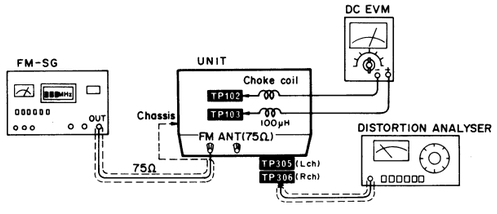


FM MONO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "**FM**" position.
3. Place the radio frequency display and signal generator setting to **100.10 MHz**.
4. Adjust **T101** core so that voltage measured in signal mode is **0 mV (0 ± 50 mV)** in **300 mV** range.
5. Adjust **T102** so that the distortion factor of L ch is minimized.
6. Repeat steps 4 and 5 a few times.
7. Make sure that the distortion factors of L ch and R ch are nearly the same with each other and are less than 0.5%.

Note: The adjusting screwdriver used should be made of resin.

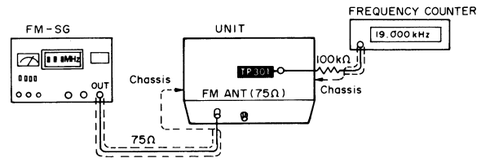
FM SIGNAL GENERATOR CONDITION
Modulation..... 100%
Modulation frequency..... 400 Hz
Output level..... 66 dB



FM STEREO ADJUSTMENT (FREE RUN)

1. Test equipment connection is shown in figure.
2. Set the unit into "FM auto" position. (by FM mode select button).
3. Place the radio frequency display and signal generator settint to 100.10 MHz.
4. Adjust **VR301** for **19 kHz ± 50 Hz** on frequency counter reading.

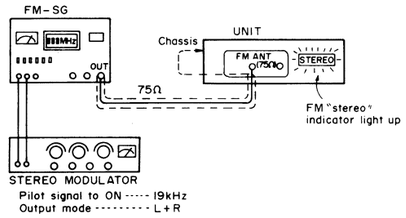
FM SIGNAL GENERATOR CONDITION
Modulation 0
Modulation frequency..... 0
Output level..... 66 dB

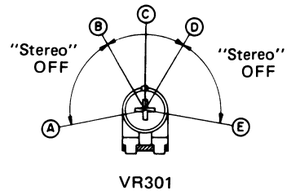


USING ALTERNATE SYSTEM

1. Apply stereo signal from generator or receive the stereo broadcast.
2. Adjust **VR301** until stereo indicator light up. Cement arm of **VR301** as shown figure.

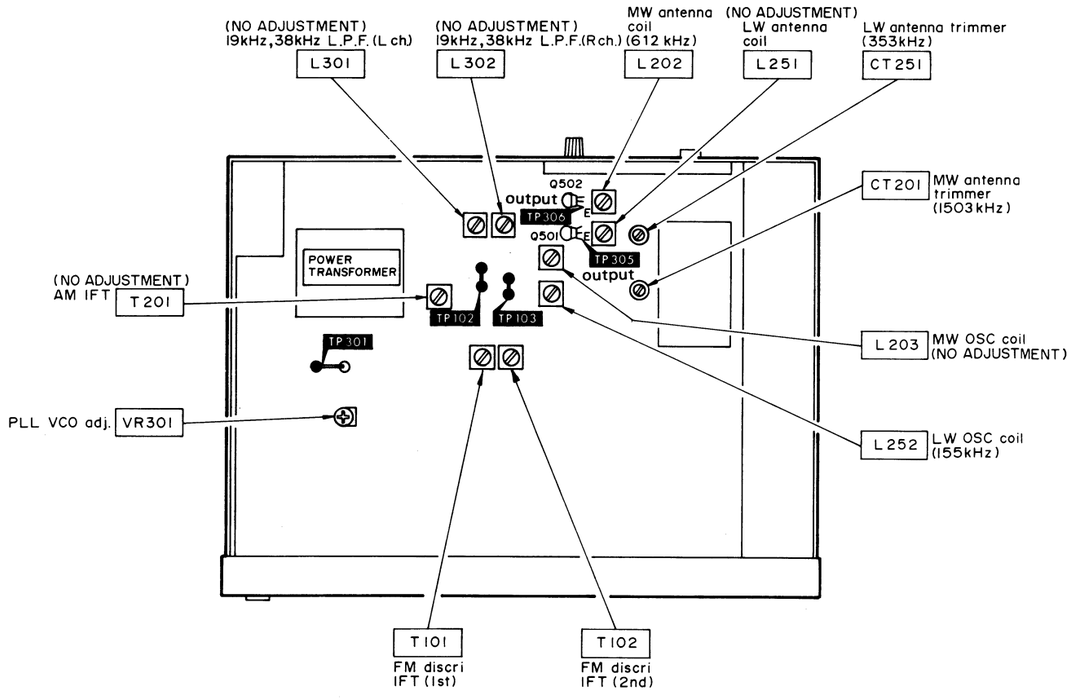
FM SIGNAL GENERATOR CONDITION
Modulation..... 10%
Modulation frequency..... Pilot (19 kHz)
Output level..... 66 dB



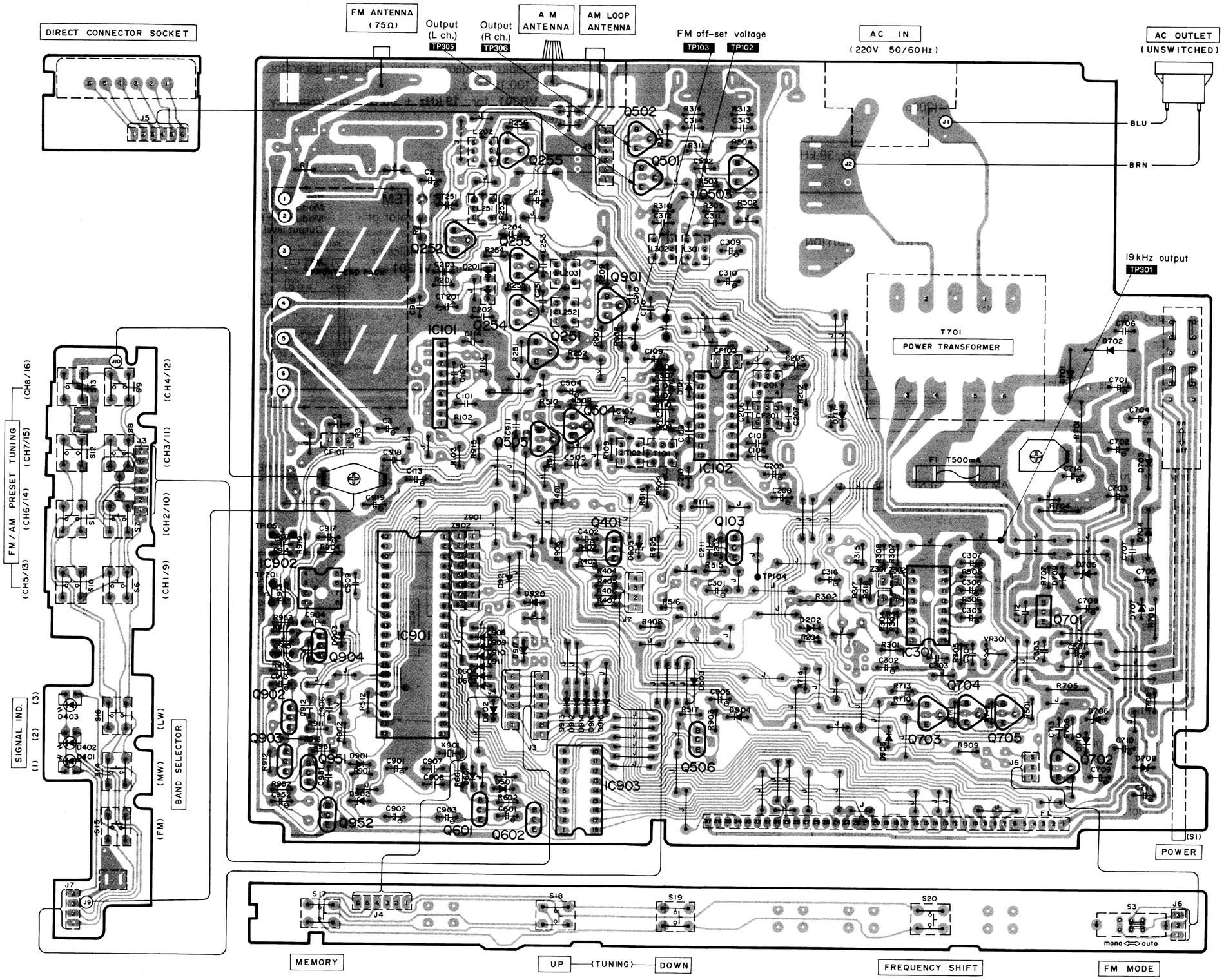


Ⓑ–Ⓓ ..... "Stereo" ON position (Indicator lighting)
Ⓒ ..... Adjust point of pilot circuit

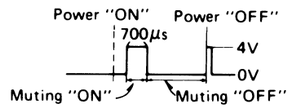
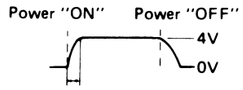
- **Adjustment points**



■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



■ FUNCTION OF TERMINAL (PLL CONTROLLER IC901)

Pin No.	Mark	Description of terminal
1	Sa	Segment signal output terminal for display. (Refer to Fig. 1)
2	Sb	
3	Sc	
4	Sd	
5	Se	
6	Sf	
7	Sg	
8	K0	Input terminal for key return signal from external key matrix. The output of segment terminals (a ~ g) is used as the key return signal source.
9	K1	
10	K2	
11	K3	
12	D6	Digit signal output terminal for display. (Refer to Fig. 1)
13	D5	
14	D4	
15	D3	
16	D2	
17	D1	This is the output terminal to eliminate shock noise due to unlocking at PLL. When the CE terminal is at low level, the output from this terminal is at high level. 
18	MT	
19	X2	Connecting terminal for crystal oscillator. The crystal connected is at 4.5 MHz.
20	X1	
21	VDD	Power supply terminal of the device.
23	GND	Ground terminal.
22, 24	E01 E02	When the divided oscillation frequency is higher than the standard frequency, H-level output is delivered from these terminals. When it is lower, L-level (0V) output is delivered. When they coincide, it results in floating.
25	CE	This is the selected signal input terminal of the device. When operating the device, make the level high, and when it is not used, make the level low. When this terminal is at low level, all the segment (a ~ g) and digits (D1 ~ D6) terminals are off, but the memory is held.  The device does not operate during this period.
26	SD	This input terminal detects the reception of a broadcasting station. The voltage is 4.2V during reception, and otherwise 0V.
27	FM	Input terminal for FM OSC output frequency-divided to 1/16 or 1/17 by pre-scaler.

Pin No.	Mark	Descripiton of terminal
28	PSC	Reference signal for pre-scaler This is the terminal to deliver the frequency dividing ratio changeover output signal to the pre-scaler. The terminal continues to produce pulses at the rise of the signal applied to FM terminal (27) until the content of the inside swallow counter is 0. The frequency dividing radio of prescaler is 1/17. When the swallow counter comes to 0, the terminal level becomes low, then the frequency dividing ratio of pre-scaler is 1/16. Pulse two times larger than the value that cannot be divided by VCO/16.
29	INT	This is the interrupt demand signal input terminal. The signal from the control input terminal is put into this terminal, demanding for interruption, then the flow of program will be unconditionally shifted to the address No. 1.
30	AM	Input terminal for AM OSC output. 1 MHz ~ 2 MHz
31	Dp	2-bit input/output. Dp (31) is decimal point indication output terminal for digital indication. Lamp (32) is not used in this unit.
32	Lamp	
33	IF	4-bit output port. FM (35) is FM/MW/LW output terminal; 5V in FM and 0V in MW/LW. LW (34) is MW/LW output terminal; 5V in LW and 0V in MW. IF (33), and AM (36) are not used in this unit.
34	LW	
35	FM	
36	AM	
37	OFF	This is 4-bit input/output port. SDC (39) is the station detector control terminal, and is 5V during FM scanning and 0V during signal reception. The other terminals are not used in this unit.
38	MONO	
39	SDC	
40	D	
41	COMP	Not used in this unit.
42	VDP	Not used in this unit.

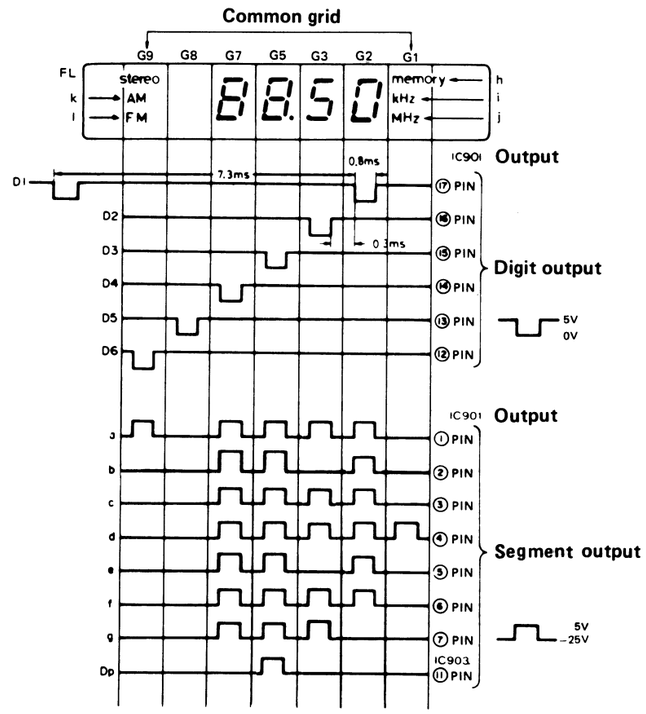
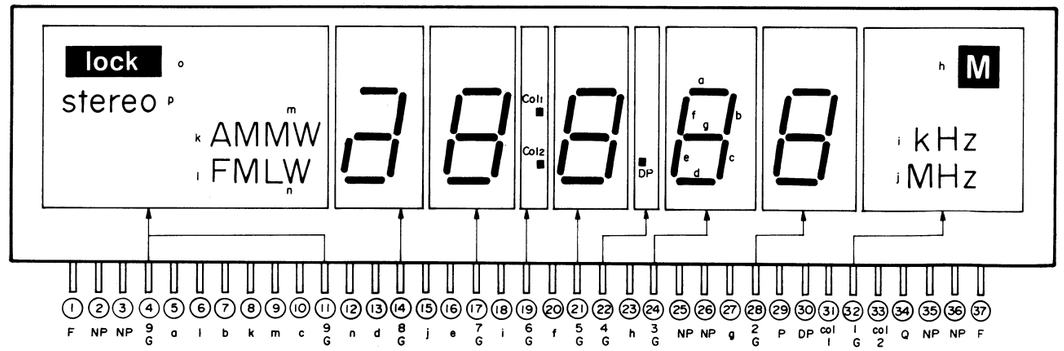


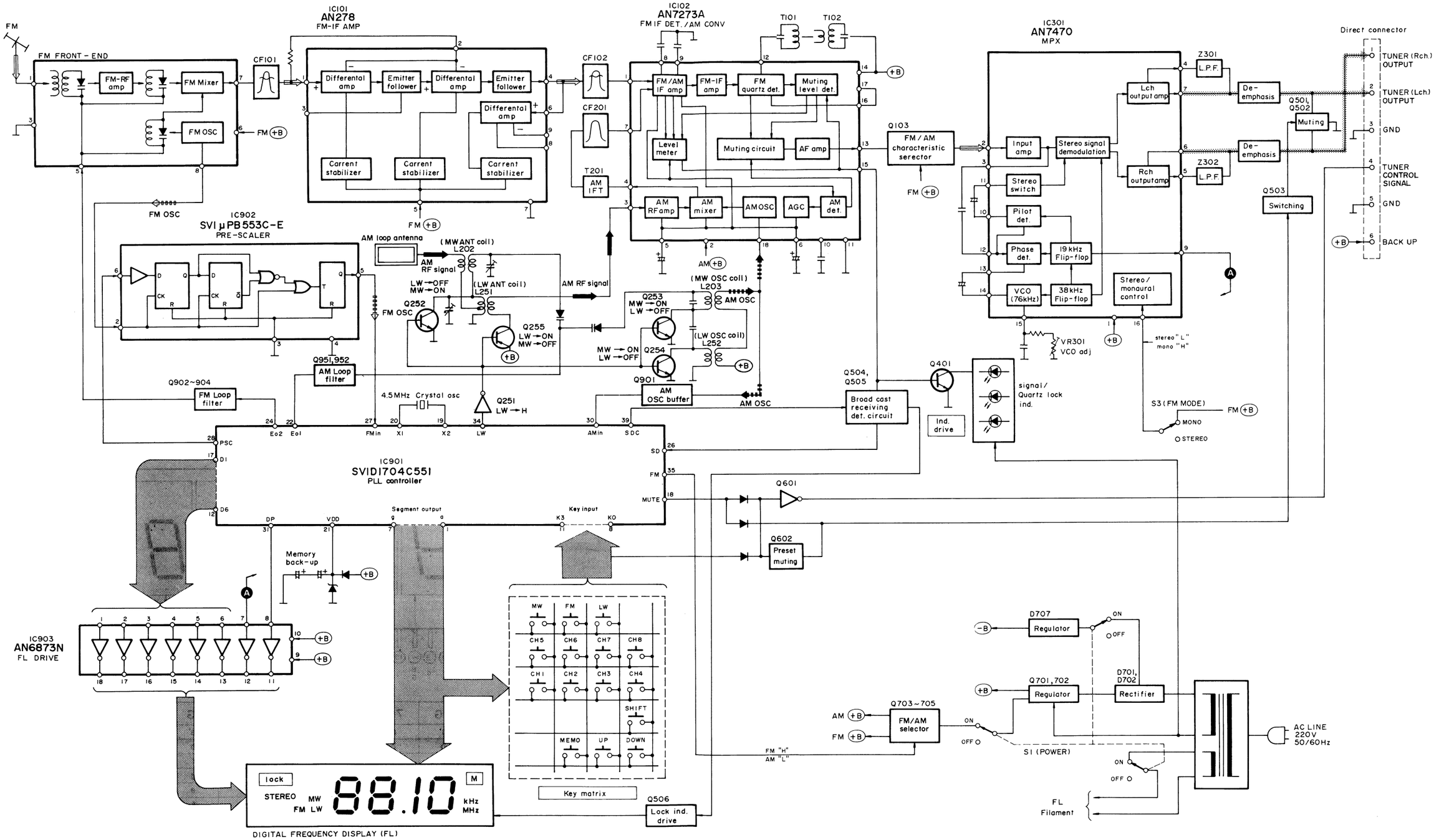
Fig. 1

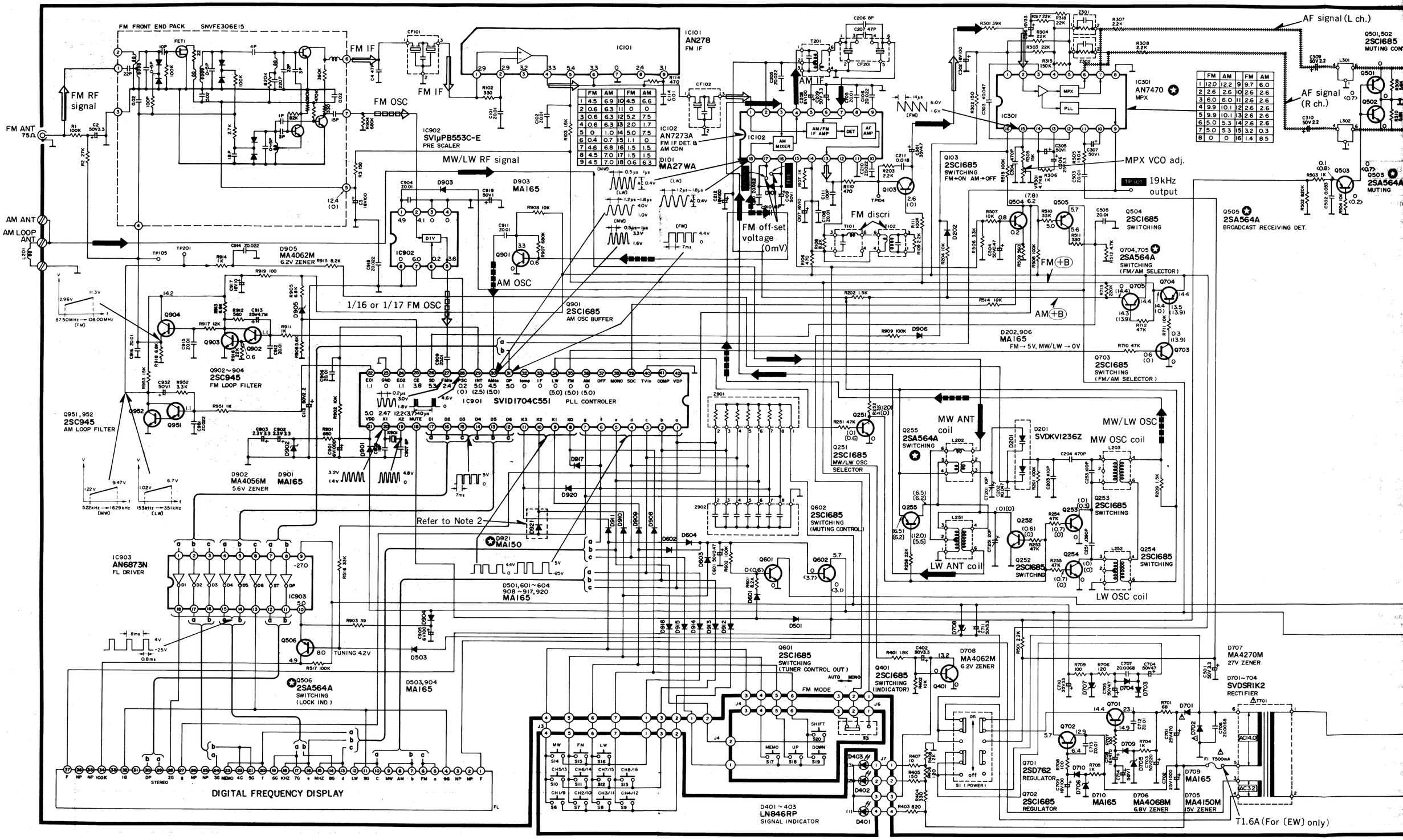
- **Digital frequency display tube (FL)**

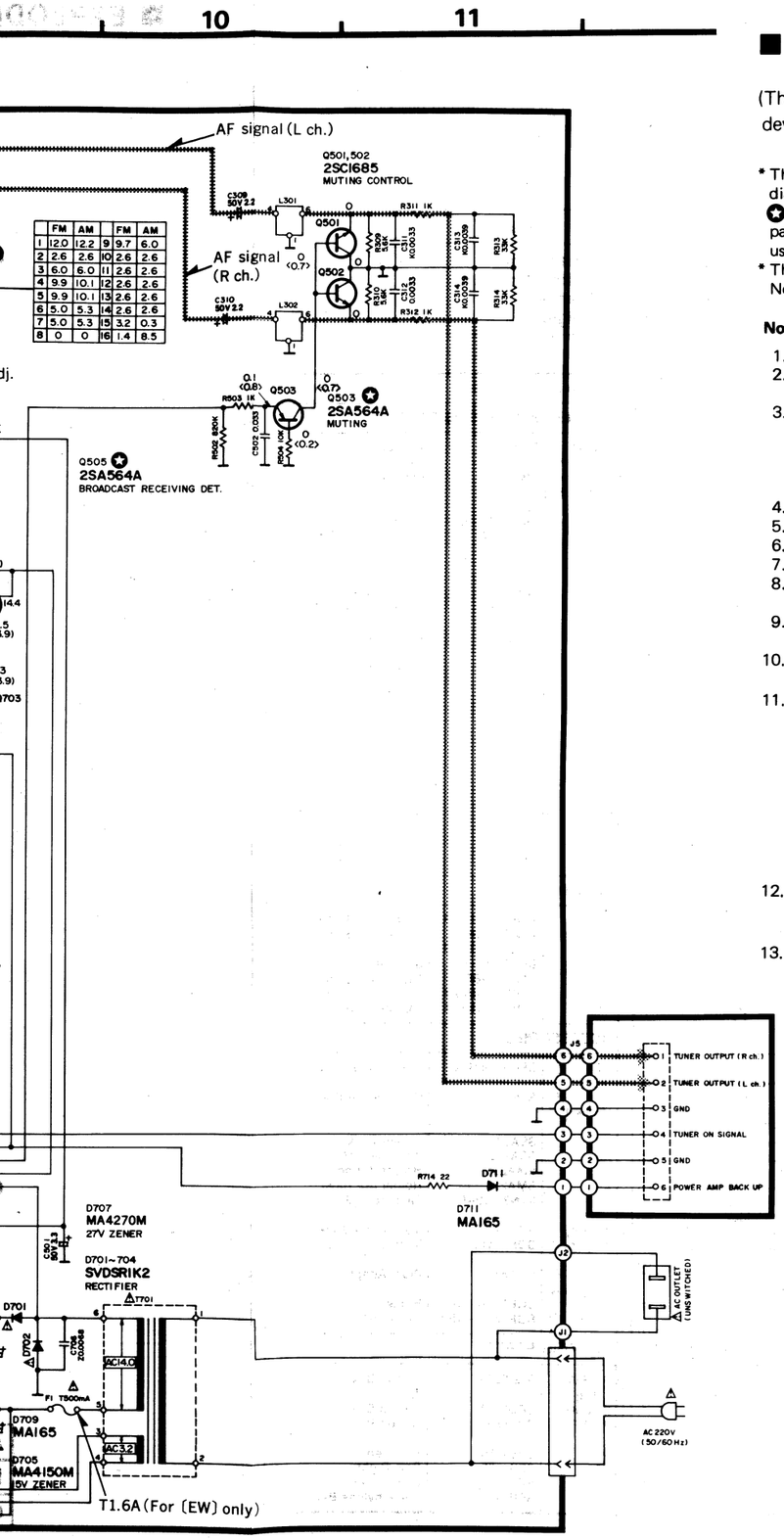

lock
stereo
AMMW
FMLW
Colt
Colz
DP
kHz
MHz
M
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37
F NP NP 9G a l b k m c 9G n d 8G j e 7G i 6G f 5G 4G h 3G NP NP g 2G P DP col l 1G col 2 Q NP NP F

Segment \ Grid	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	—	a	a	—	a	—	a	a	—
b	—	b	b	—	b	—	b	b	—
c	—	c	c	—	c	—	c	c	—
d	—	d	d	—	d	—	d	d	—
e	—	e	e	—	e	—	e	e	—
f	—	—	f	—	f	—	f	f	—
g	—	g	g	—	g	—	g	g	—
Independent Pin	AM (k) FM (l) MW (m) LW (n) lock (o) stereo (p)			col (1) col (2)		DP			M (h) kHz (i) MHz (j)

■ BLOCK DIAGRAM




FM FRONT END PACK SNVFE306E15
FM RF signal
FM ANT 75Ω
FM IF
FM OSC
IC101 AN278 FM IF
IC102 AN7273A FM IF DET & AM CON
IC902 SVIμPB553C-E PRE SCALER
D101 MA27WA
MW/LW RF signal
AM ANT
AM LOOP ANT
D903 MA165
D905 MA4062M 6.2V ZENER
AM OSC
1/16 or 1/17 FM OSC
Q901 2SC1685 AM OSC BUFFER
Q902~904 2SC945 FM LOOP FILTER
Q951,952 2SC945 AM LOOP FILTER
IC901 SVID1704C551 PLL CONTROLER
D902 MA4056M 5.6V ZENER
D901 MA165
Refer to Note 2
D921 MA150
D501,601~604 908~917,920 MA165
IC903 AN6873N FL DRIVER
DIGITAL FREQUENCY DISPLAY
Q506 2SA564A SWITCHING (LOCK IND.)
D503,904 MA165
D503
TUNING 4.2V
FM off-set voltage (0mV)
AM IF
AM MIXER
AM/FM IF AMP
DET
AF AMP
FM discri
Q103 2SC1685 SWITCHING FM→ON AM→OFF
MPX VCO adj.
TP301 19kHz output
IC301 AN7470 MPX
AF signal (L ch.)
AF signal (R ch.)
Q501,502 2SC1685 MUTING CONT
Q503 2SA564A MUTING
Q505 2SA564A BROADCAST RECEIVING DET.
Q504 2SC1685 SWITCHING
Q505
Q704,705 2SA564A SWITCHING (FM/AM SELECTOR)
Q704
Q705
Q703 2SC1685 SWITCHING (FM/AM SELECTOR)
FM(+B)
AM(+B)
D202,906 MA165 FM→5V, MW/LW→0V
Q251 2SC1685 MW/LW OSC SELECTOR
MW ANT coil
LW ANT coil
MW/LW OSC
MW OSC coil
LW OSC coil
D201 SVDKVI236Z
Q255 2SA564A SWITCHING
Q253 2SC1685 SWITCHING
Q252 2SC1685 SWITCHING
Q254 2SC1685 SWITCHING
Q602 2SC1685 SWITCHING (MUTING CONTROL)
Q601 2SC1685 SWITCHING (TUNER CONTROL OUT)
Q401 2SC1685 SWITCHING (INDICATOR)
D401~403 LN846RP SIGNAL INDICATOR
D708 MA4062M 6.2V ZENER
D707 MA4270M 27V ZENER
D701~704 SVDSRIK2 RECTIFIER
Q701 2SD762 REGULATOR
Q702 2SC1685 REGULATOR
D709 MA165
D710 MA165
D706 MA4068M 6.8V ZENER
D705 MA4150M 15V ZENER
T1.6A (For (EW) only)
S1 (POWER)
FM MODE
MEMO UP DOWN SHIFT
FM +B
AM +B



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.
* This is the basic circuit diagram of this unit.
  Note that part of the circuit is subject to change depending on the areas.

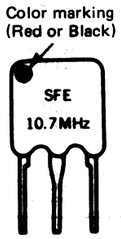
Note:

1. **S1** : Power source switch in "**on**" position.
2. **S3** : FM mode selector switch in "**auto**" position.
   auto ⟷ mono
3. **S6 ~ S13** : Preset tuning switch.
   * With it momentarily pushed (less than 0.4 sec) and released, the 1 ~ 8 CH are received.
   * With it continuously pushed (0.4 sec. or more) and released, the 9 ~ 16 CH are received.
4. **S14** : MW selector switch.
5. **S15** : FM selector switch.
6. **S16** : LW selector switch.
7. **S17** : Memory set switch. (manual ⟷ auto memory)
8. **S18** : Tuning (up) switch.
   [up : tuning to higher frequency]
9. **S19** : Tuning (down) switch.
   [down : tuning to lower frequency]
10. **S20** : FM/LW frequency-shift switch.
    (off ⟷ +25 kHz/LW −2 kHz)
11. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    All voltage values shown in circuitry are DC voltage in FM signal (no signal) reception mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM stereo signal reception mode.
    * Figures in ( ) stand for DC voltage in MW signal reception mode.
    * Figures in [ ] stand for DC voltage in LW signal reception mode.
    * Figures in < > stand for muting mode.
12. ——— Positive voltage lines ▒▒▒▒ AF signal lines
    ⇨ FM signal ⇨ FM OSC
    ➡ MW/LW signal ➡ MW/LW OSC
13. Important safety notice.
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

Note 2:

• Use of ceramic filters in pairs

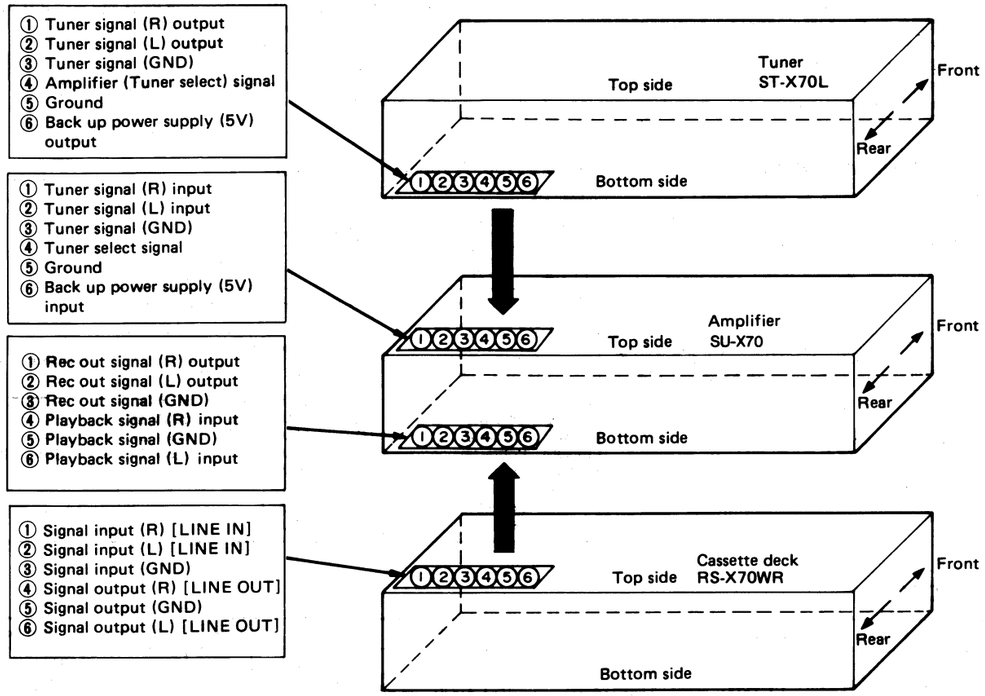
The ceramic filters (CF101, CF102) for FM-IF circuit are available in two ranks.
For this circuit, be sure to use the ceramics of the same rank in a pair. At repairing and replacement, pay close attention to the diode (D921) for use as different diodes must be used depending on each rank of the ceramic filters.



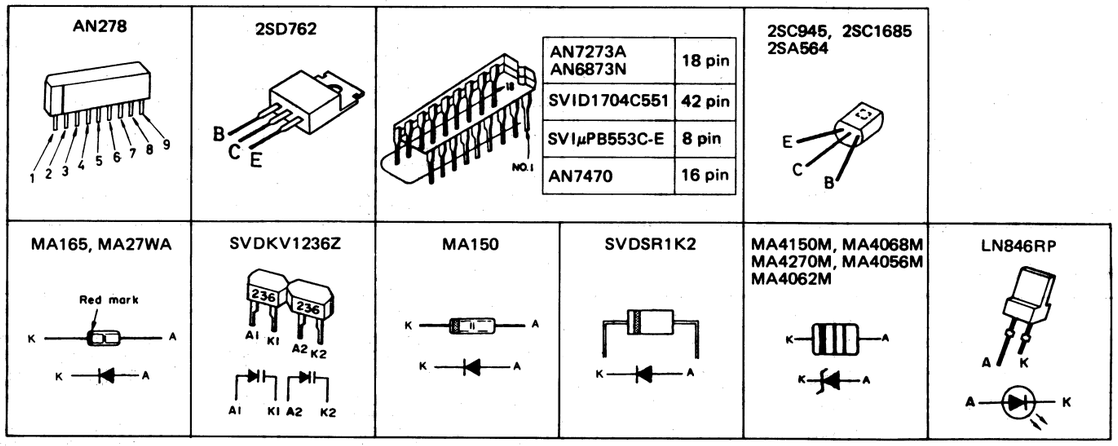
RANK (Color)	D921	CENTER FREQUENCY
Black	O	10.65 MHz
Red	X	10.70 MHz

Note: O Mark Diode is used.
X Mark Diode is not used.

■ TERMINAL FUNCTION OF DIRECT CONNECTOR


① Tuner signal (R) output
② Tuner signal (L) output
③ Tuner signal (GND)
④ Amplifier (Tuner select) signal
⑤ Ground
⑥ Back up power supply (5V) output
Tuner ST-X70L
Top side
Bottom side
Front
Rear
① Tuner signal (R) input
② Tuner signal (L) input
③ Tuner signal (GND)
④ Tuner select signal
⑤ Ground
⑥ Back up power supply (5V) input
Amplifier SU-X70
① Rec out signal (R) output
② Rec out signal (L) output
③ Rec out signal (GND)
④ Playback signal (R) input
⑤ Playback signal (GND)
⑥ Playback signal (L) input
① Signal input (R) [LINE IN]
② Signal input (L) [LINE IN]
③ Signal input (GND)
④ Signal output (R) [LINE OUT]
⑤ Signal output (GND)
⑥ Signal output (L) [LINE OUT]
Cassette deck RS-X70WR

■ TERMINAL GUIDE OF TRANSISTORS, IC'S AND DIODES



■ RESISTORS AND CAPACITORS

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is OHM (Ω). K = 1000Ω M = 1000kΩ
5. The unit of capacitance is MICROFARAD (μF) P = 10^{-6} μF

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Resistor Type	Wattage	Tolerance
ERD : Carbon ERG : Metal Oxide	25 : 1/4W S2 : 1/4W S1 : 1/2W 1 : 1W	J : ±5%

Capacitor Type	Voltage				Tolerance
	ECEA Type		Other		
ECEA : Electrolytic	0J	: 6.3V	1H	: 50V DC	C : ±0.25pF
ECCD : Ceramic	1A	: 10V	2H	: 500V DC	J : ±5%
ECKD : Ceramic	1C	: 16V	2R3	: 2.3V DC	K : ±10%
ECQM : Polyester	1E	: 25V	1	: 125V DC	Z : +80%, −20%
ECQP : Polypropylene	1H	: 50V			
EECW : Liquid electrolyte double layer capacitor	1V	: 35V			
	50	: 50V			
	25	: 25V			

● RESISTORS

Ref. No.	Part No.	Value
R1	ERDS2TJ104	100K
R2	ERDS2TJ273	27K
R3 [EK] ⚠	ERDS1FVJ151	150
R3 [Other]	ERDS2TJ151	150
R102	ERDS2TJ331	330
R103	ERDS2TJ152	1.5K
R106	ERDS2TJ471	470
R107	ERDS2TJ102	1K
R108	ERDS2TJ822	8.2K
R109	ERDS2TJ222	2.2K
R110	ERDS2TJ471	470
R111	ERDS2TJ104	100K
R114	ERDS2TJ471	470
R201	ERDS2TJ104	100K
R202	ERDS2TJ152	1.5K
R203	ERDS2TJ222	2.2K
R204	ERDS2TJ103	10K
R209	ERDS2TJ152	1.5K
R251	ERDS2TJ473	47K
R252	ERDS2TJ332	3.3K
R253, 254	ERDS2TJ473	47K
R255	ERDS2TJ473	47K
R256	ERDS2TJ223	22K
R301	ERDS2TJ393	39K
R302	ERG1ANJ151	150
R303, 304	ERDS2TJ223	22K
R305	ERDS2TJ153	15K
R306	ERDS2TJ102	1K
R307, 308	ERDS2TJ222	2.2K
R309, 310	ERDS2TJ562	5.6K
R311, 312	ERDS2TJ102	1K
R313, 314	ERDS2TJ333	33K
R315	ERDS2TJ154	150K
R317, 318	ERDS2TJ223	22K
R401	ERDS2TJ182	1.8K
R402	ERDS2TJ103	10K
R403	ERDS2TJ821	820
R404	ERDS2TJ331	330
R405	ERDS2TJ151	150
R406	ERDS2TJ121	120
R407	ERDS2TJ100	10
R408	ERDS2TJ122	1.2K
R501	ERDS2TJ222	2.2K
R502	ERDS2TJ824	820K
R503	ERDS2TJ102	1K
R504	ERDS2TJ103	10K
R505	ERDS2TJ154	150K
R506	ERDS2TJ332	3.3K
R507	ERDS2TJ103	10K
R508	ERDS2TJ104	100K
R509	ERDS2TJ561	560
R510	ERDS2TJ333	33K
R511	ERDS2TJ331	330
R512	ERDS2TJ472	4.7K
R514	ERDS2TJ103	10K
R515	ERDS2TJ104	100K
R516	ERDS2TJ333	33K
R517	ERDS2TJ104	100K
R601	ERDS2TJ822	8.2K
R602	ERDS2TJ104	100K
R701	ERG1ANJ680	68
R704, 705 ⚠	ERDS1FVJ102	1K
R706 ⚠	ERDS1FVJ121	120
R707, 708	ERDS2TJ101	100
R709	ERDS2TJ101	100
R710	ERDS2TJ473	47K
R711	ERDS2TJ103	10K
R712	ERDS2TJ473	47K
R713	ERDS2TJ224	220K
R714	ERDS2TJ220	22
R901	ERDS2TJ681	680
R902	ERDS2TJ103	10K
R903	ERDS2TJ390	39
R904	ERDS2TJ684	680K
R905	ERDS2TJ682	6.8K
R906	ERDS2TJ562	5.6K
R907	ERDS2TJ684	680K
R908	ERDS2TJ103	10K
R909	ERDS2TJ104	100K
R911	ERDS2TJ102	1K
R912	ERDS2TJ561	560
R913	ERDS2TJ682	6.8K
R914	ERDS2TJ102	1K
R915	ERDS2TJ822	8.2K
R916	ERDS2TJ223	22K
R917	ERDS2TJ123	12K
R918	ERDS2TJ682	6.8K
R919 [EK]	ERG1ANJ101	100
R919 [Other]	ERDS2TJ101	100
R951	ERDS2TJ102	1K
R952	ERDS2TJ332	3.3K
R953	ERDS2TJ153	15K

● CAPACITORS

Ref. No.	Part No.	Value
C2	ECEA1HU3R3	3.3
C3	ECEA1CU101	100
C4 Ⓢ	ECCD1H470K	48P
C101, 102 Ⓢ	ECKD1H103ZF	0.01
C105 Ⓢ	ECKD1H183JZ	0.01
C106 Ⓢ	ECKD1H223ZF	0.022
C107	ECEA1CU100	10
C108 Ⓢ	ECKD1H103ZF	0.01
C109	ECEA1HU010	1
C110 Ⓢ	ECKD1H223ZF	0.022
C111 Ⓢ	ECCD1H101K	100P
C113	ECEA1HU2R2	2.2
C114 Ⓢ	ECKD1H103ZF	0.01
C202 Ⓢ	ECQM1H473JZ	0.047
C203 Ⓢ	ECCD1H100KIC	10P
C204	ECQP1471JZ	470P
C205 Ⓢ	ECKD1H223ZF	0.022
C206 Ⓢ	ECCD1H080CC	8P
C207 Ⓢ	ECCD1H470K	47P
C208	ECEA0JU101	100
C209	ECEA1HU3R3	3.3
C210 Ⓢ	ECKD1H223ZF	0.022
C211 Ⓢ	ECQM1H183JZ	0.018
C212	ECEA1CU101	100
C251	ECQP1391JZ	390P
C253 Ⓢ	ECCD1H100KC	10P
C301	ECEA1VU4R7	4.7
C302	ECEA1CU101	100
C303 Ⓢ	ECQM1H473JZ	0.047
C304	ECQP1471JZ	470P
C305	ECEA1HU010	1
C306	ECEA1HU3R3	3.3
C307	ECEA1HU010	1
C309, 310	ECEA1HU2R2	2.2
C311, 312 Ⓢ	ECQM1H332JZ	0.0033
C313, 314 Ⓢ	ECQM1H392JZ	0.0039
C316	ECEA1CU330	33
C402	ECEA1HU3R3	3.3
C501	ECEA1HU3R3	3.3
C502 Ⓢ	ECKD1H333ZF	0.033
C503 Ⓢ	ECKD1H103ZF	0.01
C504	ECEA1HUR47	0.47
C505 Ⓢ	ECKD1H103ZF	0.01
C601	ECEA1HUR47	0.47
C701	ECEA1EU471	470
C702	ECEA1EU102	1000
C703	ECEA1HU221	220
C704, 705	ECEA1HU470	47
C706, 707	ECKD2H682PE	0.0068
C708	ECEA1CU471	470
C709	ECEA1CU101	100
C710	ECEA1VU330	33
C711	ECEA1HU3R3	3.3
C712, 713 Ⓢ	ECKD1H103ZF	0.01
C714	ECEA1HU010	1
C901	ECEA0JU102	1000
C902, 903	EECW2R3A3R3E	3.3F
C904 Ⓢ	ECKD1H103ZF	0.01
C905	ECEA0JU101	100
C906 Ⓢ	ECKD1H103ZF	0.01
C907 Ⓢ	ECCD1H080CC	8P
C908 Ⓢ	ECCD1H180KC	18P
C909 Ⓢ	ECKD1H103ZF	0.01
C910 Ⓢ	ECCD1H180K	18P
C911, 912 Ⓢ	ECKD1H103ZF	0.01
C913	ECEA25M4R7R	4.7
C914 Ⓢ	ECKD1H223ZF	0.022
C915, 916	ECKD1H103ZF	0.01
C917	ECEA1CU100	10
C918 Ⓢ	ECKD1H223ZF	0.022
C919	ECEA1HU010	1
C951 Ⓢ	ECKD1H223ZF	0.022
C952	ECEA1HU010	1

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "Ⓢ" mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the column of description stand for the quantity per set.

Color	Areas
(K)	[EW] ...Switzerland.
(K)	[EK] ...United Kingdom.
(K)	[EF] ...France.
(K)	[EB] ...Belgium.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC101	AN278	Integrated Circuit
IC102	AN7273A	Integrated Circuit
IC301	SVIμPC1161C3	Integrated Circuit (Product part is AN7470)
IC901	SVID1704C551	Integrated Circuit
IC902	SVIUPB553C−E	Integrated Circuit
IC903	AN6873N	Integrated Circuit
TRANSISTORS		
Q103, 251~254, Ⓢ 401, 501, 502, 504, 601, 602, 702, 703, 901	2SC1685−QNC	Transistor
Q255, 503, 505 Ⓢ 506, 704, 705	2SA722−S	Transistor (Product part is 2SA564)
Q701	2SD762−Q	Transistor
Q902~904, 951 952	2SC945P1	Transistor
DIODES		
D101	MA27W−A	Diode
D201 ⚠	SVDKV1236Z	Rectifire
D202, 501, 503 601~604, 709~711, 901, 903, 904, 906, 908~917, 920	MA165	Diode
D401~403	LN846RP	LED
D701~704 ⚠	SVDSR1K2	Rectifire
D705	MA4150M	Diode
D706	MA4068M	Diode
D707	MA4270M	Diode
D708, 905	MA4062M	Diode
D902	MA4056M	Diode
D921 Ⓢ	MA162A	Diode
COILS		
L202	SLA2B3−P	Coil
L203	SL02B9R−P	Coil
L251	SLA1B7R−P	Coil
L252	SL01B5−P	Coil
L301, 302	SLM1B3−K	Coil
TRANSFORMERS		
T101	SLI4B511−Z	Transformer
T102	SLI4B513−Z	Transformer
T201	SLI2B101−M	Transformer
T701 [EK] ⚠	SLT5K143	Power Source
T701 [other] ⚠	SLT5K141	Power Source
CERAMIC FILTERS		
CF101, 102	SVFE107MS8−A	FM, 10.7MHz (Red)
	SVFE107MS8−D	FM, 10.65MHz (Black)
CF201	SVFSFZ450F7L	AM, 450kHz

Ref. No.	Part No.	Description
CRYSTAL		
X901	SVQ43U452−D	Crystal OSC
VARIABLE RESISTOR		
VR301	QVNB3A00B472	Variable Resistor, 4.7kΩ (B)
VARIABLE CAPACITORS		
CT201	SVCTZ03T110F	Variable Capacitor
CT251	SVCTZ03R200F	Variable Capacitor
FRONT END		
	SNVFE306E15	Front End Pack
FLUORESCENT DISPLAY TUBE		
FL	SAD9MT27Z	Frequency Display
COMPONENT COMBINATIONS		
Z301, 302	EXRP102K473T	0.001μF, 47kΩ (×1)
Z901	EXBP87104K	100kΩ (×7)
Z902	EXFP7331MW	330pF (×7)
FUSES		
F1 ⚠	XBA2C05TR0	250V, T500mA
F1 [EW] only ⚠	XBA2C16TR0	250V, T1.6A
SWITCHIES		
S11	SSH1069	Power
S3	SSS160	Auto−Mono
S6~20	SSG13	Preset

Ref. No.	Part No.	Description
CABINET and CHASSIS PARTS		
1	SUV536	Button Cover (1)
2	SBC681−1	Preset Button (1)
3	SBC680−1	Preset Button (1)
4	SBD110−1	Preset Button (1)
5	SHR9747	FL Holder (1)
6	SGYTX70L−KE1	Front Panel Ass'y (1)
6-1	SGU455	Transparent Plate (1)
6-2	SDU261−1	Filter (1)
7	SGYTX70L−KE2	Ornament Cover Ass'y (1)
9	SBC489	Power Button (1)
10	SBC688−1	AM&FM Button (1)
11	SBC673−1	Preset Button (1)
12	SUB111−2	Connection Rod (1)
13 [EW]	SGPTX70L−SW	Chassis Ass'y (1)
13 [EK]	SGPTX70L−SK	Chassis Ass'y (1)
13 [EF, EB]	SGPTX70L−SF	Chassis Ass'y (4)
13-1	SKL293	Foot (4)
14	SBC681−2	Preset Button (1)
15	SJS9230	AC Inlet (1)

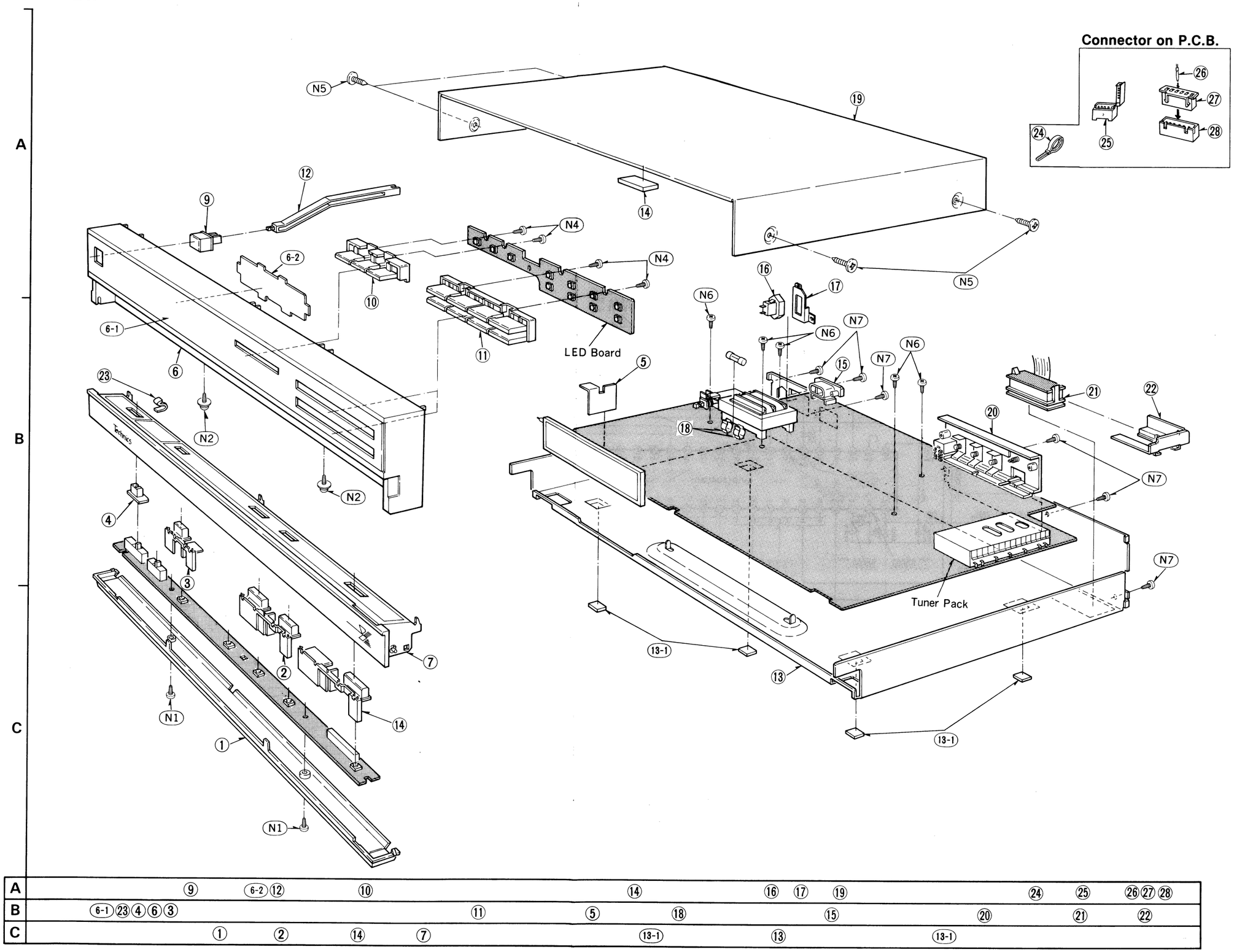
Ref. No.	Part No.	Description
CABINET and CHASSIS PARTS		
16 [EW, EF, EB]	SJS9225	AC Outlet (1)
17 [EW, EF, EB]	SMN1959	Bracket (1)
18	SJT347	Fuse Holder (4)
19	SKCTX70−KE	Cabinet Ass'y (1)
20	SJF8302N	ANT Terminal Board (1)
21	SJS9605	Direct Connector (1)
22	SMN1942	Holder (1)
23	SUS775	Spring (Left only) (1)
24	SHR301	Read Clamper (1)
25	SJS5421	Socket (4P) (1)
25	SJS5627	Socket (6P) (1)
25	SJS5707	Socket (7P) (1)
26	SJT783	Pin (9)
27	SJS5331	Socket (3P) (1)
27	SJS5629	Socket (6P) (1)
28	SJT3319	Post (3P) (1)
28	SJT3611	Post (6P) (1)
29	SJT785	Pin (9)
30	SJS5337	Connector (3P) (1)
30	SJS5633	Connector (6P) (1)
SCREWS		
N1	XTB3+10BFYR	Tapping, ⊕3×10 (2)
N2	XTW3+8BFZ	Tapping, ⊕3×8 (2)
N4	XTB3+10BFYR	Tapping, ⊕3×10 (4)
N5	SNE2095−5	Cabinet (4)
N6	XTW3+8BFZ	Tapping, ⊕3×8 (3)
N7	XTBS3+8BFZ1	Tapping, ⊕3×8 (4)
N8	XTBS3+8BFZ1	Tapping, ⊕3×8 (2)
ACCESSORIES		
A1 ⚠ [EK]	SFDAC05G02	Cord, Power Source (1)
A1 ⚠ [other]	SJA171	Cord, Power Source (1)
A2	SSA270	Antenna, FM (1)
A3	SSA902−4	Antenna, AM (1)
A4	SMA231	Holder (for set) (1)
A5	SMA233−1	Holder (for ruck) (1)
A6	XTN3+10AFZ	Tapping, ⊕3×10 (2)
A7 [EK]	SQF12402	Instruction Book (1)
A7 [other]	SQF12319	Instruction Book (1)
A8 ⚠ [EK] only	SJP9009	Plug, Adaptor (1)
A9	SGETX70−KE1	Holder (L) (1)
A10	SGETX70−KE2	Holder (R) (1)
PACKING PARTS		
P1 [EW, EB]	SPG5236	Carton Box (1)
P1 [EK]	SPG5237	Carton Box (1)
P1 [EF]	SPG5235	Carton Box (1)
P2	SPS4565	Pad, Left (1)
P3	SPS4566	Pad, Right (1)
P4	SPS4549	Pad, Upper (1)
P5	SPP741	Polyethylene Bag (1)

■ EXPLODED VIEW

may differ

description

Description	
RTS	
C Outlet	(1)
racket	(1)
use Holder	(4)
abinet Ass'y	(1)
NT Terminal Board	(1)
irect Connector	(1)
older	(1)
pring (Left only)	(1)
ead Clamper	(1)
ocket (4P)	(1)
ocket (6P)	(1)
ocket (7P)	(1)
n	(9)
ocket (3P)	(1)
ocket (6P)	(1)
ost (3P)	(1)
ost (6P)	(1)
n	(9)
onnector (3P)	(1)
onnector (6P)	(1)
apping, ⊕3×10	(2)
apping, ⊕3×8	(2)
apping, ⊕3×10	(4)
abinet	(4)
apping, ⊕3×8	(3)
apping, ⊕3×8	(4)
apping, ⊕3×8	(2)
ord, Power Source	(1)
ord, Power Source	(1)
ntenna, FM	(1)
ntenna, AM	(1)
older (for set)	(1)
older (for ruck)	(1)
apping, ⊕3×10	(2)
struction Book	(1)
struction Book	(1)
ug, Adaptor	(1)
older (L)	(1)
older (R)	(1)
rton Box	(1)
rton Box	(1)
rton Box	(1)
d, Left	(1)
d, Right	(1)
d, Upper	(1)
lyethylene Bag	(1)



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